

The following Listing of Claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (Previously Presented) An air conditioning system configured to treat a latent heat load and a sensible heat load in a room by performing a vapor compression refrigeration cycle operation, comprising:

a plurality of first utilization side refrigerant circuits each having an adsorbent heat exchanger provided with an adsorbent on a surface thereof, configured for alternating between an adsorption process in which moisture in air is adsorbed onto the adsorbent by causing the adsorbent heat exchanger to function as an evaporator that evaporates refrigerant and a regeneration process in which moisture is desorbed from the adsorbent by causing the adsorbent heat exchanger to function as a condenser that condenses the refrigerant, and connected in parallel with one another; and

a plurality of second utilization side refrigerant circuits each having an air heat exchanger, configured for exchanging heat between refrigerant and air, and connected in parallel with one another,

the first utilization side refrigerant circuits being configured to supply a room with air that passed through the adsorbent heat exchanger, and the second utilization side refrigerant circuits being configured to supply a room with air that passed through the air heat exchangers.

2. (Previously Presented) The air conditioning system according to claim 1, further comprising

a heat source side refrigerant circuit including a compression mechanism and a heat source side heat exchanger, the heat source side refrigerant circuit being used as a heat source by both the first utilization side refrigerant circuits and the said second utilization side refrigerant circuits,

the first utilization side refrigerant circuits being connected to a discharge gas connection pipe connected to a discharge side of the compression mechanism, and being

connected to an inlet gas connection pipe connected to an inlet side of the compression mechanism.

3. (Previously Presented) An air conditioning system configured to treat a latent heat load and a sensible heat load in a room by performing a vapor compression refrigeration cycle operation, the air conditioning system comprising:

a first utilization side refrigerant circuit having an adsorbent heat exchanger provided with an adsorbent on a surface thereof and configured for alternating between an adsorption process in which moisture in air is adsorbed onto the adsorbent by causing the adsorbent heat exchanger to function as an evaporator that evaporates refrigerant, and a regeneration process in which moisture is desorbed from the adsorbent by causing the adsorbent heat exchanger to function as a condenser that condenses refrigerant;

a plurality of second utilization side refrigerant circuits each having an air heat exchanger, configured for exchanging heat between refrigerant and air, and connected in parallel with one another; and

a heat source side refrigerant circuit including a compression mechanism and a heat source side heat exchanger, the heat source side refrigerant circuit being used as a heat source by both the first utilization side refrigerant circuit and the second utilization side refrigerant circuits,

the first utilization side refrigerant circuit being connected to a discharge gas connection pipe connected to a discharge side of the compression mechanism, and being connected to an inlet gas connection pipe connected to an inlet side of the compression mechanism,

the first utilization side refrigerant circuit being configured to supply a room with air that passed through the adsorbent heat exchanger, and

the second utilization side refrigerant circuits being configured to supply a room with air that passed through the air heat exchanger.

4. (Previously Presented) The air conditioning system according to claim 2, wherein

the second utilization side refrigerant circuits are connected to a liquid connection pipe that is connected to a liquid side of the heat source side heat exchanger, and switchably connected to the discharge gas connection pipe and the inlet gas connection pipe through a switching mechanism.

5. (Previously Presented) The air conditioning system according to claim 2, wherein

the second utilization side refrigerant circuits are connected to a liquid connection pipe connected to a liquid side of the heat source side heat exchanger, and are connected to the inlet gas connection pipe.

6. (Previously Presented) The air conditioning system according to claim 2, wherein

the first utilization side refrigerant circuits and the second utilization side refrigerant circuits constitute an integrated utilization unit.

7. (Previously Presented) The air conditioning system according to claim 6, wherein

the utilization unit is configured to supply a room with air that was dehumidified or humidified in the adsorbent heat exchanger.

8. (Previously Presented) The air conditioning system according to claim 6, wherein

the utilization unit is configured to exchange heat through the air heat exchanger between refrigerant and air that was dehumidified or humidified in the adsorbent heat exchanger.

9. (Previously Presented) The air conditioning system according to claim 2, wherein

the air conditioning system is configured to calculate a required latent heat treatment capacity value and a required sensible heat treatment capacity value in order to control an

operational capacity of the compression mechanism based on a required latent heat treatment capacity value and a required sensible heat treatment capacity value.

10. (Previously Presented) The air conditioning system according to claim 9, wherein

the air conditioning system is configured to calculate a target evaporation temperature and a target condensation temperature of the system as a whole based on the required latent heat treatment capacity value and the required sensible heat treatment capacity value in order to control the operational capacity of the compression mechanism based on a target evaporation temperature and a target condensation temperature.

11. (Previously Presented) The air conditioning system according to claim 10, wherein

the air conditioning system is configured to calculate an evaporation temperature difference between the target evaporation temperature and an evaporation temperature and to calculate a condensation temperature difference between the target condensation temperature and a condensation temperature in order to control the operational capacity of the compression mechanism based on the evaporation temperature difference and the condensation temperature difference.

12. (Previously Presented) The air conditioning system according to claim 9, wherein

a switching time interval between the adsorption process and the regeneration process in the adsorbent heat exchanger is changeable.

13. (Previously Presented) The air conditioning system according to claim 1, wherein

at system startup, a room is supplied with air that passed through the air heat exchanger, and outdoor air is prevented from passing through the adsorbent heat exchanger.

14. (Previously Presented) The air conditioning system according to claim 1, wherein

at system startup, in a state in which switching between the adsorption process and the regeneration process in the plurality of adsorbent heat exchangers is stopped, outdoor air is passed through one of the plurality of adsorbent heat exchangers and then is exhausted to the outside, and also room air is passed through an adsorbent heat exchanger among the plurality of adsorbent heat exchangers, besides the one through which the outdoor air passed, and then is supplied to a room again.

15. (Previously Presented) The air conditioning system according to claim 1, wherein

at system startup, a switching time interval between the adsorption process and the regeneration process in the adsorbent heat exchanger is made longer than that during normal operation.

16. (Previously Presented) The air conditioning system according to claim 13, wherein

a system startup operation is terminated after a predetermined period of time elapsed since system startup.

17. (Previously Presented) The air conditioning system according to claim 13, wherein

a system startup operation is terminated after a temperature difference between a target temperature of room air and a temperature of room air is equal to or below a predetermined temperature difference.

18. (Previously Presented) The air conditioning system according to claim 13, wherein

before a system startup operation starts, a temperature difference between a target temperature of room air and a temperature of room air is determined, and

when the temperature difference between the target temperature of room air and the temperature of room air is equal to or below a predetermined temperature, the system startup operation is prevented from being performed.

19. (Previously Presented) The air conditioning system according to claim 2, further comprising

a pressure control mechanism connected to a gas side of the air heat exchanger and configured to control an evaporation pressure of refrigerant in the air heat exchanger when the air heat exchanger is caused to function as an evaporator that evaporates refrigerant.

20. (Previously Presented) The air conditioning system according to claim 19, wherein

when the air heat exchanger is caused to function as an evaporator that evaporates refrigerant, the evaporation pressure of refrigerant is controlled by the pressure control mechanism, based on a dew point temperature of room air.

21. (Previously Presented) The air conditioning system according to claim 20, further comprising

a pressure detection mechanism configured to detect a refrigerant pressure in the air heat exchanger and an evaporation pressure of refrigerant, wherein

the air conditioning system calculates a target evaporation pressure value based on the dew point temperature of room air and uses the pressure control mechanism to control the evaporation pressure of refrigerant to be equal to or higher than the target evaporation pressure.

22. (Previously Presented) The air conditioning system according to claim 21, further comprising

a plurality of condensation detection mechanisms configured to detect a presence of condensation in the air heat exchangers, wherein

when condensation is detected by the condensation detection mechanism, the target evaporation pressure value is changed.

23. (Previously Presented) The air conditioning system according to claim 21, further comprising
a condensation detection mechanism configured to detect a presence of condensation in the air heat exchanger, wherein
when condensation is detected by the condensation detection mechanism, the compression mechanism is stopped.

24. (Previously Presented) The air conditioning system according to claim 21, further comprising
a condensation detection mechanism configured to detect a presence of condensation in the air heat exchanger, wherein,
the second utilization side refrigerant circuit includes an utilization side expansion valve connected to a liquid side of the air heat exchangers, and
when condensation is detected by the condensation detection mechanism, the utilization side expansion valve is closed.

25. (Previously Presented) The air conditioning system according to claim 2, wherein
a switching time interval between the adsorption process and the regeneration process in the adsorbent heat exchanger is changeable.

26. (Previously Presented) The air conditioning system according to claim 19, wherein
at system startup, treatment of a latent heat load in a room by the first utilization side refrigerant circuit is given priority over treatment of a sensible heat load in a room by the second utilization side refrigerant circuit.

27. (Previously Presented) The air conditioning system according to claim 26, wherein

at system startup, treatment of the sensible heat load in a room by the second utilization side refrigerant circuit is stopped until a dew point temperature of room air is equal to or below a target dew point temperature.

28. (Previously Presented) The air conditioning system according to claim 26, wherein

at system startup, treatment of the sensible heat load in a room by the second utilization side refrigerant circuit is stopped until an absolute humidity of room air is equal to or below a target absolute humidity.

29. (Previously Presented) The air conditioning system according to claim 26, wherein

at system startup, outdoor air is passed through one of the adsorbent heat exchangers that is performing a regeneration process, and then is exhausted to the outside, and then room air is passed through one of the adsorbent heat exchangers that is performing the adsorption process and is supplied to a room.

30. (Previously Presented) The air conditioning system according to claim 26, wherein

before starting a system startup operation, a dew point temperature difference between a target dew point temperature of room air and a dew point temperature of the room air is determined, and

when the dew point temperature difference between the target dew point temperature of room air and the dew point temperature of room air is equal to or below a predetermined dew point temperature difference, the startup operation is prevented from being performed.

31. (Previously Presented) The air conditioning system according to claim 26, wherein

before starting a system startup operation, an absolute humidity difference between a target absolute humidity of room air and an absolute humidity of the room air is determined, and

when the absolute humidity difference between the target absolute humidity of room air and the absolute humidity of room air is equal to or below a predetermined absolute humidity difference, the system startup operation is prevented from being performed.

32. (Previously Presented) The air conditioning system according to claim 3, wherein

the second utilization side refrigerant circuits are connected to a liquid connection pipe that is connected to a liquid side of the heat source side heat exchanger, and switchably connected to the discharge gas connection pipe and the inlet gas connection pipe through a switching mechanism.

33. (Previously Presented) The air conditioning system according to claim 3, wherein

the second utilization side refrigerant circuits are connected to a liquid connection pipe connected to a liquid side of the heat source side heat exchanger, and are connected to the inlet gas connection pipe.

34. (Previously Presented) The air conditioning system according to claim 3, wherein

the air conditioning system is configured to calculate a required latent heat treatment capacity value and a required sensible heat treatment capacity value in order to control an operational capacity of the compression mechanism based on a required latent heat treatment capacity value and a required sensible heat treatment capacity value.

35. (Previously Presented) The air conditioning system according to claim 3, wherein

at system startup, a room is supplied with air that passed through the air heat exchanger, and outdoor air is prevented from passing through the adsorbent heat exchanger.

36. (Previously Presented) The air conditioning system according to claim 3, wherein

at system startup, in a state in which switching between the adsorption process and the regeneration process in the plurality of adsorbent heat exchangers is stopped, outdoor air is passed through one of the plurality of adsorbent heat exchangers and then is exhausted to the outside, and also room air is passed through an adsorbent heat exchanger among the plurality of adsorbent heat exchangers, besides the one through which the outdoor air passed, and then is supplied to a room again.

37. (Previously Presented) The air conditioning system according to claim 3, further comprising

a pressure control mechanism connected to a gas side of the air heat exchanger and configured to control an evaporation pressure of refrigerant in the air heat exchanger when the air heat exchanger is caused to function as an evaporator that evaporates refrigerant.

38. (Previously Presented) The air conditioning system according to claim 3, wherein

a switching time interval between the adsorption process and the regeneration process in the adsorbent heat exchanger is changeable.